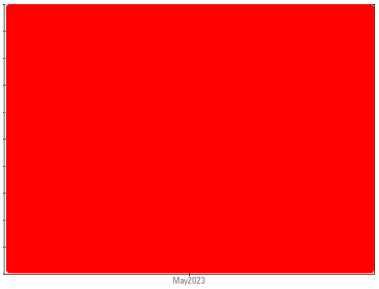
PROBLEM SUMMARY

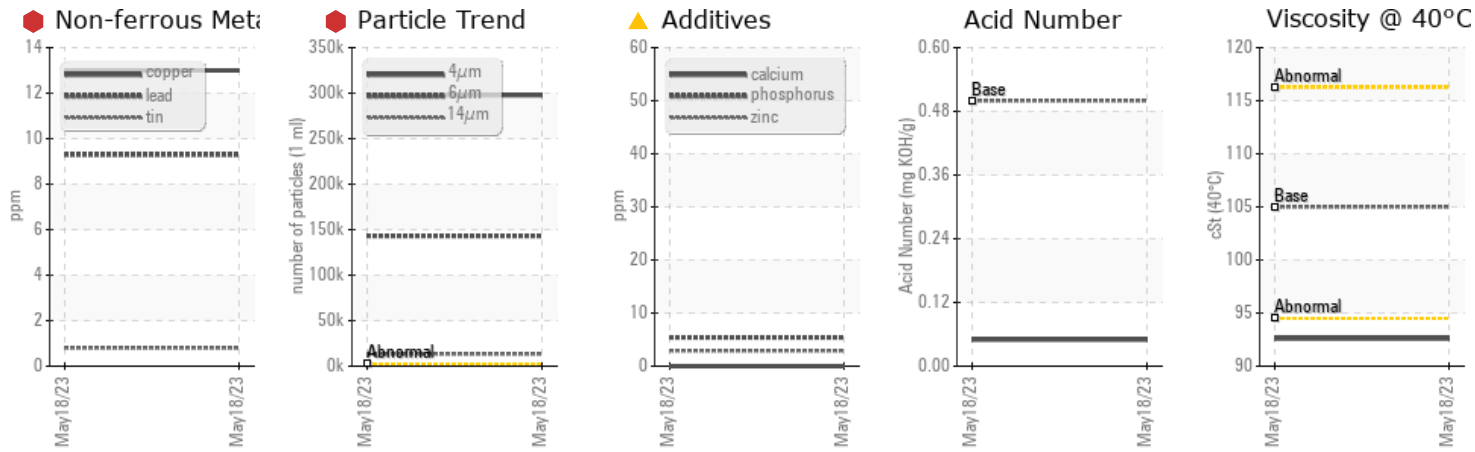
Sample Rating Trend



VISUAL METAL

Area
LSGS PLANT 1
Machine Id
G3 BULKHEAD
Component
Turbine
Fluid
PETRO CANADA PURITY FG EP GEAR OIL 100 (60 LTR)

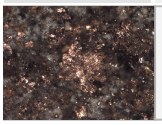
COMPONENT CONDITION SUMMARY



RECOMMENDATION

Check seals and/or filters for points of contaminant entry. We advise that you check all areas where contaminants can enter the system. We advise that you check for visible metal particles in the oil. Wear particles and/or ppm levels are abnormally high indicating the need to review OEM limits with attention to components that may generate this type of wear. Include all test results and maintenance activities that have been performed since the abnormal condition was first detected in this review. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We recommend that you drain the oil from the component if this has not already been done. Confirm the source of the lubricant being utilized for top-up/fill. An inspection for the source(s) of wear may be warranted at this time. Resample in 30-45 days to monitor this situation. Re-sampling is suggested to confirm test results prior to significant maintenance activities being performed. Please indicate that this is a resample on your Sample Information Form (SIF).

PROBLEMATIC TEST RESULTS

Sample Status				**SEVERE**	---	---
Lead	ppm	ASTM D5185(m)		▲ **9**	---	---
Copper	ppm	ASTM D5185(m)	>5	⬢ **13**	---	---
Phosphorus	ppm	ASTM D5185(m)	135	▲ **5**	---	---
Sulfur	ppm	ASTM D5185(m)	660	▲ **208**	---	---
Particles >4µm		ASTM D7647	>2500	⬢ **297771**	---	---
Particles >6µm		ASTM D7647	>640	⬢ **143092**	---	---
Particles >14µm		ASTM D7647	>80	⬢ **13402**	---	---
Particles >21µm		ASTM D7647	>20	⬢ **3104**	---	---
Particles >38µm		ASTM D7647	>4	⬢ **65**	---	---
Oil Cleanliness		ISO 4406 (c)	>18/16/13	⬢ **25/24/21**	---	---
Yellow Metal	scalar	Visual*	NONE	⬢ **MDHVY**	---	---
Appearance	scalar	Visual*	NORML	▲ **LAYRD**	---	---
Free Water	scalar	Visual*		▲ **>10%**	---	---
PrtFilter					*no image*	*no image*

Customer Id: PET412PET
Sample No.: WC0801008
Lab Number: 02560432
Test Package: IND 2

To manage this report scan the QR code

To discuss the diagnosis or test data:
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Gloria Gonzalez +1 (289)291-4643 x4643
gloria.gonzalez@wearcheck.com

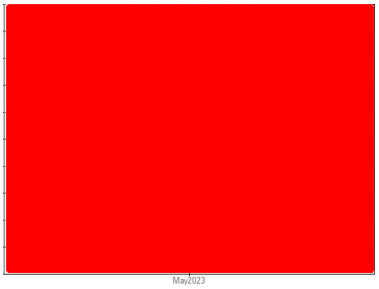
RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Inspect Wear Source	---	---	?	An inspection for the source(s) of wear may be warranted at this time.
Monitor	---	---	?	Wear particles and/or ppm levels are abnormally high indicating the need to review OEM limits with attention to components that may generate this type of wear. Include all test results and maintenance activities that have been performed since the abnormal condition was first detected in this review.
Change Fluid	---	---	?	We recommend that you drain the oil from the component if this has not already been done.
Resample	---	---	?	Resample in 30-45 days to monitor this situation. Re-sampling is suggested to confirm test results prior to significant maintenance activities being performed. Please indicate that this is a resample on your Sample Information Form (SIF).
Alert	---	---	?	Wear particles and/or ppm levels are abnormally high indicating the need to review OEM limits with attention to components that may generate this type of wear. Include all test results and maintenance activities that have been performed since the abnormal condition was first detected in this review.
Check Breathers	---	---	?	The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather.
Check Dirt Access	---	---	?	We advise that you check all areas where contaminants can enter the system.
Check Fluid Source	---	---	?	Confirm the source of the lubricant being utilized for top-up/fill.
Check For Visual Metal	---	---	?	We advise that you check for visible metal particles in the oil.
Check Seals	---	---	?	Check seals and/or filters for points of contaminant entry.

HISTORICAL DIAGNOSIS

OIL ANALYSIS REPORT

Sample Rating Trend



VISUAL METAL

Area
LSGS PLANT 1
Machine Id
G3 BULKHEAD
Component
Turbine
Fluid
PETRO CANADA PURITY FG EP GEAR OIL 100 (60 LTR)

DIAGNOSIS

Recommendation

Check seals and/or filters for points of contaminant entry. We advise that you check all areas where contaminants can enter the system. We advise that you check for visible metal particles in the oil. Wear particles and/or ppm levels are abnormally high indicating the need to review OEM limits with attention to components that may generate this type of wear. Include all test results and maintenance activities that have been performed since the abnormal condition was first detected in this review. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We recommend that you drain the oil from the component if this has not already been done. Confirm the source of the lubricant being utilized for top-up/fill. An inspection for the source(s) of wear may be warranted at this time. Resample in 30-45 days to monitor this situation. Re-sampling is suggested to confirm test results prior to significant maintenance activities being performed. Please indicate that this is a resample on your Sample Information Form (SIF).

Wear

Copper ppm levels are severe. Lead ppm levels are noted. High concentration of visible metal present. Bearing wear is indicated.

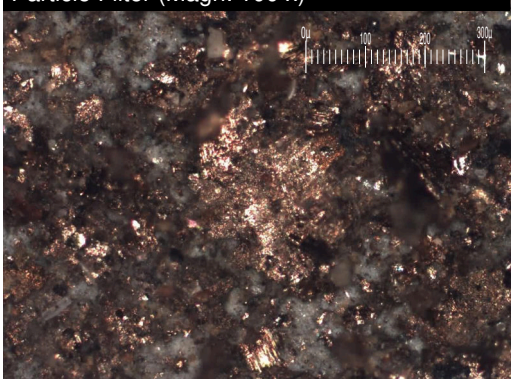
Contamination

There is a high amount of particulates (2 to 100 microns in size) present in the oil. Excessive free water present.

Fluid Condition

Additive levels indicate the addition of a different brand, or type of oil. The viscosity of the oil is higher than normal, possibly indicating the addition of a heavier grade of oil. The AN level is acceptable for this fluid. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

Particle Filter (Magn: 100 x)



SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC0801008**	---	---
Sample Date		Client Info		**18 May 2023**	---	---
Machine Age	yrs	Client Info		**120**	---	---
Oil Age	yrs	Client Info		**2**	---	---
Oil Changed		Client Info		**Not Changd**	---	---
Sample Status				**SEVERE**	---	---

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>15	**3**	---	---
Chromium	ppm	ASTM D5185(m)	>4	**0**	---	---
Nickel	ppm	ASTM D5185(m)	>2	**0**	---	---
Titanium	ppm	ASTM D5185(m)		**0**	---	---
Silver	ppm	ASTM D5185(m)		**0**	---	---
Aluminum	ppm	ASTM D5185(m)	>10	**0**	---	---
Lead	ppm	ASTM D5185(m)		▲ **9**	---	---
Copper	ppm	ASTM D5185(m)	>5	⬢ **13**	---	---
Tin	ppm	ASTM D5185(m)	>5	**<1**	---	---
Antimony	ppm	ASTM D5185(m)		**0**	---	---
Vanadium	ppm	ASTM D5185(m)		**0**	---	---
Beryllium	ppm	ASTM D5185(m)		**0**	---	---
Cadmium	ppm	ASTM D5185(m)		**0**	---	---

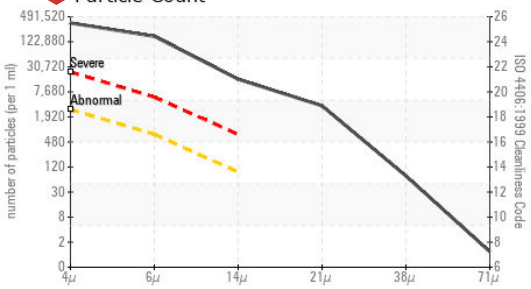
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)		**<1**	---	---
Barium	ppm	ASTM D5185(m)		**0**	---	---
Molybdenum	ppm	ASTM D5185(m)		**0**	---	---
Manganese	ppm	ASTM D5185(m)		**0**	---	---
Magnesium	ppm	ASTM D5185(m)		**<1**	---	---
Calcium	ppm	ASTM D5185(m)		**0**	---	---
Phosphorus	ppm	ASTM D5185(m)	135	▲ **5**	---	---
Zinc	ppm	ASTM D5185(m)		**3**	---	---
Sulfur	ppm	ASTM D5185(m)	660	▲ **208**	---	---
Lithium	ppm	ASTM D5185(m)		**<1**	---	---

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>15	**0**	---	---
Sodium	ppm	ASTM D5185(m)		**<1**	---	---
Potassium	ppm	ASTM D5185(m)	>20	**<1**	---	---
Water	%	ASTM D6304*	>0.03	**0.00**	---	---
ppm Water	ppm	ASTM D6304*	>300	**0.00**	---	---

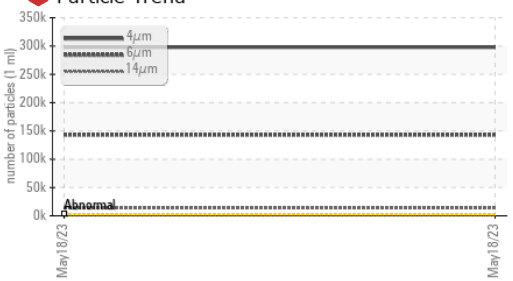
FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>2500	⬢ **297771**	---	---
Particles >6µm		ASTM D7647	>640	⬢ **143092**	---	---
Particles >14µm		ASTM D7647	>80	⬢ **13402**	---	---
Particles >21µm		ASTM D7647	>20	⬢ **3104**	---	---
Particles >38µm		ASTM D7647	>4	⬢ **65**	---	---
Particles >71µm		ASTM D7647	>3	**1**	---	---
Oil Cleanliness		ISO 4406 (c)	>18/16/13	⬢ **25/24/21**	---	---

OIL ANALYSIS REPORT

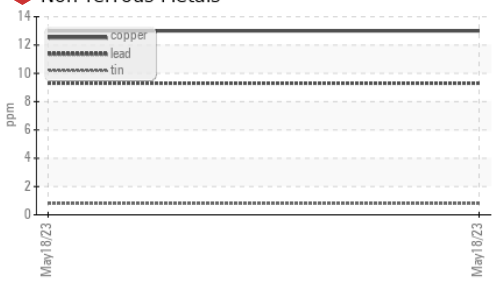
Particle Count



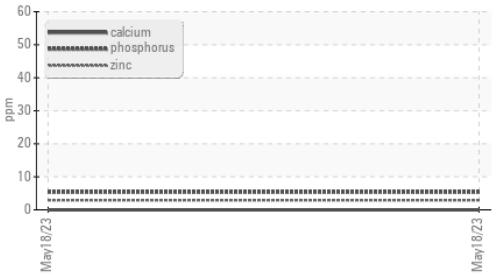
Particle Trend



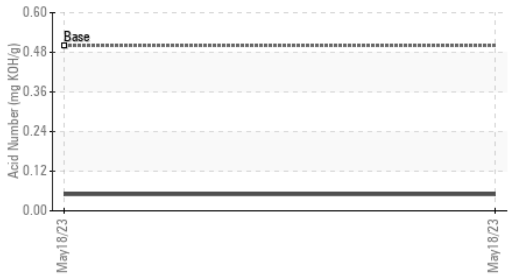
Non-ferrous Metals



Additives



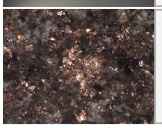
Acid Number



FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*	0.50	**0.05**	---	---

VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	**NONE**	---	---
Yellow Metal	scalar	Visual*	NONE	**MDHVY**	---	---
Precipitate	scalar	Visual*	NONE	**NONE**	---	---
Silt	scalar	Visual*	NONE	**NONE**	---	---
Debris	scalar	Visual*	NONE	**NONE**	---	---
Sand/Dirt	scalar	Visual*	NONE	**NONE**	---	---
Appearance	scalar	Visual*	NORML	**LAYRD**	---	---
Odor	scalar	Visual*	NORML	**NORML**	---	---
Emulsified Water	scalar	Visual*	>0.03	**1%**	---	---
Free Water	scalar	Visual*		**>10%**	---	---

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	105.0	**92.6**	---	---

SAMPLE IMAGES	method	limit/base	current	history1	history2
Color				*no image*	*no image*
Bottom				*no image*	*no image*
PrtFilter				*no image*	*no image*

ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0801008 **Received** : 29 May 2023
Lab Number : 02560432 **Diagnosed** : 30 May 2023
Unique Number : 5581472 **Diagnostician** : Kevin Marson
Test Package : IND 2 (Additional Tests: Bottom, BottomAnalysis, FilterPatch, PrtFilter)

To discuss this sample report, contact Customer Service at 1-800-268-2131.
Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
Validity of results and interpretation are based on the sample and information as supplied.

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